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Table of Contents

Editorials

- 727 The surgical treatment for atrial fibrillation: A call for standardization ▲**
Niv Ad, MD, Falls Church, Va
- 729 The demise of aprotinin: Our share of the blame**
Thoralf M. Sundt, MD, Rochester, Minn

Guidelines

- 732 Guidelines for reporting mortality and morbidity after cardiac valve interventions**
Cary W. Akins, MD, D. Craig Miller, MD, Marko I. Turina, MD, Nicholas T. Kouchoukos, MD, Eugene H. Blackstone, MD, Gary L. Grunkemeier, PhD, Johanna J. M. Takkenberg, MD, PhD, Tirone E. David, MD, Eric G. Butchart, MD, David H. Adams, MD, David M. Shahian, MD, Siegfried Hagl, MD, John E. Mayer, MD, and Bruce W. Lytle, MD, Boston, MA

Surgery for Congenital Heart Disease (CHD)

- 739 Glycemic profile in infants who have undergone the arterial switch operation: Hyperglycemia is not associated with adverse events**
Joseph W. Rossano, MD, Michael D. Taylor, MD, PhD, E. O'Brian Smith, PhD, Charles D. Fraser, Jr, MD, E. Dean McKenzie, MD, Jack F. Price, MD, Heather A. Dickerson, MD, David P. Nelson, MD, PhD, and Antonio R. Mott, MD, Houston, Tex

Ninety-three infants undergoing the arterial switch operation were reviewed. Infants spending the majority of the first postoperative day with glucose values between 80 and 110 mg/dL were at increased risk for adverse events ($P < .001$), whereas infants with hyperglycemia were not at increased risk. The optimal glycemic profile for infants after cardiac operations is unknown.

- 746 Perioperative B-type natriuretic peptide levels predict outcome after bidirectional cavopulmonary anastomosis and total cavopulmonary connection**
Jong-Hau Hsu, MD, Peter E. Oishi, MD, Roberta L. Keller, MD, Omar Chikovani, MD, Tom R. Karl, MD, Anthony Azakie, MD, Ian Adatia, MBChB, and Jeffrey R. Fineman, MD, San Francisco, Calif and Kaohsiung, Taiwan

BNP levels were measured in 36 infants and children undergoing BCPA or TCPC. BNP levels increased after surgery, and higher postoperative levels were associated with adverse outcome in the BCPA group. In the TCPC group, patients with TCPC failure had higher preoperative BNP levels than those with good outcome.

(continued on page 14A)

Table of Contents (continued)

754 Single-stage versus 2-stage repair of coarctation of the aorta with ventricular septal defect



Henry L. Walters, III, MD, Constantine E. Ionan, MD, Ronald L. Thomas, PhD, and Ralph E. Delius, MD, Detroit, Mich

The advantages of single-stage over 2-stage repair of ventricular septal defect with coarctation of the aorta include an earlier age at completion of repair, fewer operations, and fewer incisions. Postoperative complications and hospital mortality are similar. The one disadvantage of a single-stage repair was the increased need for delayed sternal closure compared with the 2-stage approach.

Cardiopulmonary Support and Physiology (CSP)

762 Concomitant treatment with oral L-arginine improves the efficacy of surgical angiogenesis in patients with severe diffuse coronary artery disease: The Endothelial Modulation in Angiogenic Therapy randomized controlled trial

Marc Ruel, MD, MPH, Robert S. Beanlands, MD, Mireille Lortie, PhD, Vincent Chan, MD, Nancy Camack, RN, Robert A. deKemp, PhD, Erik J. Suuronen, PhD, Fraser D. Rubens, MD, Jean N. DaSilva, PhD, Frank W. Sellke, MD, Duncan J. Stewart, MD, and Thierry G. Mesana, MD, PhD, Toronto and Ottawa, Ontario, Canada and Boston, Massachusetts

Patients with surgical triple-vessel coronary disease and a severely diffusely diseased left anterior descending artery were randomized to receive VEGF-165 or placebo in the anterior myocardium along the proximal and mid-LAD arteries, plus daily oral L-arginine or placebo for 3 months. The distal LAD and other coronary arteries were grafted. Compared with other groups, patients who received the combination of VEGF and L-arginine had improved anterior wall perfusion and better anterior wall contractility at 3 months versus baseline.

771 Polyurethane cuffed endotracheal tubes to prevent early postoperative pneumonia after cardiac surgery: A pilot study

Jan Poelaert, MD, PhD, Pieter Depuydt, MD, Annick De Wolf, MD, Stijn Van de Velde, MD, Ingrid Herck, MD, and Stijn Blot, PhD, Gent, Belgium

A randomized, single blind trial compared polyvinyl cuffed with polyurethane cuffed endotracheal tubes in cardiac surgical patients. PU cuffed ET reduced the frequency of early postoperative pneumonia in cardiac surgery patients from 42 to 23%, respectively.

777 Reduction in postsurgical adhesion formation after cardiac surgery in a rabbit model using N,O-carboxymethyl chitosan to block cell adherence

Juan Zhou, MD, PhD, Robert S. Liwski, MD, PhD, Clive Elson, PhD, and Timothy D. G. Lee, PhD, Halifax, Nova Scotia

The objectives of this study were to assess the efficacy of N,O-carboxymethyl chitosan (NOCC) on post-surgical adhesion formation after cardiac surgery using a rabbit cardiac injury model and to explore the mechanism of action of NOCC in the prevention of post-surgical adhesions using in vitro experimentation. Using a rabbit cardiac injury model, we demonstrated that NOCC significantly reduced adhesion formation when assessed at 14 days or 3 months after surgery. In vitro experiments demonstrated that fibroblasts and macrophages did not adhere to NOCC coated surfaces. This suggests that the mechanism of action of NOCC could be to act as a bio-physical barrier.

(continued on page 16A)

Table of Contents (continued)

784 Optimizing selective cerebral perfusion: Deleterious effects of high perfusion pressures

James C. Halstead, MA (Cantab) MB BChir, MD, MRCS (Eng), Matthias Meier, MD, Michael Wurm, MD, Ning Zhang, MD, David Spielvogel, MD, Donald Weisz, PhD, Carol Bodian, DrPH, and Randall B. Griep, MD, New York, NY

In an experimental porcine survival model of hypothermic selective cerebral perfusion at 20°C, the use of higher perfusion pressures was associated with greater disturbance in cerebral autoregulation, excessive cerebral blood flow, elevated intracranial pressure, and poorer neurobehavioral outcomes than seen with lower pressures.

792 Acute β -blockade prevents myocardial β -adrenergic receptor desensitization and preserves early ventricular function after brain death

Prakash K. Pandalai, MD, Kelly M. McLean, MD, Christian F. Bulcao, MD, MBA, Jodie Y. Duffy, PhD, Karen M. D'Souza, PhD, Walter H. Merrill, MD, Jeffrey M. Pearl, MD, and Shahab A. Akhter, MD, Cincinnati, Ohio

Acute β -blockade before and immediately after brain death led to attenuation of myocardial β -adrenergic receptor desensitization and preserved ventricular function in an experimental model of donor heart dysfunction. The primary mechanism was decreased activity of G protein-coupled receptor kinase 2, which phosphorylates and uncouples agonist-occupied β -adrenergic receptors.

799 Transplantation of hypoxia-preconditioned mesenchymal stem cells improves infarcted heart function via enhanced survival of implanted cells and angiogenesis

Xinyang Hu, MD, Shan Ping Yu, MD, PhD, Jamie L. Fraser, BA, Zhongyang Lu, MD, PhD, Molly E. Ogle, BS, Jian-An Wang, MD, PhD, and Ling Wei, MD, Hangzhou, China, and Charleston, SC

Hypoxic preconditioning enhances the capacity of mesenchymal stem cells to repair infarcted myocardium.

809 Is minimally invasive harvesting of the great saphenous vein for coronary artery bypass surgery a cost-effective technique?

Christopher Rao, MBBS, Omer Aziz, MRCS, Samer Deeba, MD, Andre Chow, MRCS, Catherine Jones, MBBS, Zhifang Ni, BSc, Leonidas Papastavrou, MD, Shamim Rahman, MBBS, Ara Darzi, FRCS, KBE, and Thanos Athanasiou, PhD, FETCS, London, United Kingdom

This economic analysis comparing minimally invasive and conventional open harvesting techniques of the great saphenous vein for coronary artery bypass surgery suggests that minimally invasive vein harvesting offers superior perioperative health-related quality of life in addition to being more cost-effective.

General Thoracic Surgery (GTS)

816 Diffusion-weighted magnetic resonance imaging can be used in place of positron emission tomography for N staging of non-small cell lung cancer with fewer false-positive results

Hiroaki Nomori, MD, PhD, Takeshi Mori, MD, PhD, Koei Ikeda, MD, PhD, Koichi Kawanaka, MD, PhD, Shinya Shiraishi, MD, PhD, Kazuhiro Katahira, MD, PhD, and Yasuyuki Yamashita, MD, PhD, Kumamoto, Japan

Both positron emission tomography-computed tomography (PET-CT) and diffusion-weighted magnetic resonance imaging (DWI) was prospectively used for N staging in 88 patients before surgical intervention for non-small cell lung cancer (NSCLC). DWI can be used in place of PET-CT for N staging of NSCLC with fewer false-positive results compared with PET-CT.

(continued on page 18A)

Table of Contents (continued)

823 Impact of tumor-infiltrating T cells on survival in patients with malignant pleural mesothelioma

Masaki Anraku, MD, Kristopher S. Cunningham, MD, PhD, Zhihong Yun, BS, Ming-Sound Tsao, MD, Li Zhang, PhD, Shaf Keshavjee, MD, Michael R. Johnston, MD, and Marc de Perrot, MD, Toronto, Ontario, Canada

Tumor-infiltrating lymphocytes in malignant pleural mesothelioma were analyzed. The presence of high levels of CD8 cytotoxic tumor-infiltrating lymphocytes is associated with better prognosis in patients undergoing extrapleural pneumonectomy for malignant pleural mesothelioma. The stimulation of CD8 cytotoxic lymphocytes can be a potential therapeutic strategy to improve outcome.

830 Clinicopathologic factors influencing postoperative prognosis in patients with small-sized adenocarcinoma of the lung

Masayoshi Inoue, MD, PhD, Tetsuya Takakuwa, MD, PhD, Masato Minami, MD, PhD, Hiroyuki Shiono, MD, PhD, Tomoki Utsumi, MD, PhD, Yoshihisa Kadota, MD, PhD, Takuma Nasu, MD, PhD, Katsuyuki Aozasa, MD, PhD, and Meinoshin Okumura, MD, PhD, Osaka, Japan

For patients with a small-sized adenocarcinoma of the lung, microscopic necrosis, Ki-67 labeling index (LI) of greater than 5%, and increase of serum carcinoembryonic antigen levels are predictors for nodal involvement. Recurrence risk increases in patients with tumors showing microscopic necrosis, high Ki-67 LI, and lymphatic invasion detected with D2-40 staining.

837 Transbronchial needle aspiration in sarcoidosis: Yield and predictors of a positive aspirate

Rocco Trisolini, MD, Carmine Tinelli, MD, Alessandra Cancellieri, MD, Daniela Paioli, MD, Marco Alifano, MD, Maurizio Boaron, MD, and Marco Patelli, MD, Bologna and Pavia, Italy, and Paris, France

This prospective study demonstrates that transbronchial needle aspiration is an excellent diagnostic procedure for sarcoidosis with hilar or mediastinal involvement, regardless of disease stage (I vs II). Sampling of more than one nodal station is the only variable significantly associated with the likelihood of sarcoidosis-positive aspirate or biopsy sample.

843 Remediastinoscopy in restaging of lung cancer after induction therapy

Alessandro Marra, MD, Ludger Hillejan, MD, Sylvia Fechner, MD, and Georgios Stamatis, MD, Essen and Ostercappeln, Germany

Remediastinoscopy for restaging lung cancer after induction therapy provides a histologic proof of mediastinal downstaging with an accuracy of 88%, is technically feasible with low morbidity, and still remains a valuable tool, even in an era of highly sophisticated imaging and endoscopic procedures.

Evolving Technology (ET) 850 A novel method to reduce pericardial adhesion: A combination technique with hyaluronic acid biocompatible membrane



Yuji Naito, MD, Toshiharu Shin'oka, MD, PhD, Narutoshi Hibino, MD, PhD, Goki Matsumura, MD, PhD, and Hiromi Kurosawa, MD, PhD, Tokyo, Japan

The antiadhesive effect of a novel technique with the hyaluronic acid bioabsorbable membrane combined use with both ePTFE and autologous pericardium were assessed. In hyaluronic acid-treated group, a significant reduction of postoperative adhesion was noted and a single layer of mesothelial cells was regenerated on the neotissue fibrils.

(continued on page 20A)

Table of Contents (continued)

Surgery for Acquired Cardiovascular Disease (ACD)

- 857 Robotic totally endoscopic coronary artery bypass: A word of caution implicated by a five-year follow-up**
Utz Kappert, MD, Sems-Malte Tugtekin, MD, Romuald Cichon, MD, Martin Braun, MD, and Klaus Matschke, MD, PhD, Dresden, Germany
- This report describes a 5-year follow-up of patients after TECAB. Forty-one patients underwent TECAB for isolated high-grade LAD lesions. End points were freedom from major adverse events such as death, myocardial infarction, and repeated revascularization.
- 863 Surgery for atrial fibrillation in patients with mitral valve disease: Results at five years from the International Registry of Atrial Fibrillation Surgery ▲**
Joao Melo, MD, PhD, Teresa Santiago, MSc, Carlos Aguiar, MD, Eva Berglin, MD, PhD, Michael Knaut, MD, Ottavio Alfieri, MD, PhD, Stefano Benussi, MD, PhD, Haw Sie, MD, Mathew Williams, MD, Fernando Hornero, MD, PhD, Giuseppe Marinelli, MD, Paul Ridley, MD, Enrique Fulquet-Carreras, MD, and António Ferreira, MD, Carnaxide, Portugal, Goteborg, Sweden, Dresden, Germany, Milano and Bologna, Italy, Zwolle, The Netherlands, New York, NY, Valencia and Valladolid, Spain, and Staffordshire, United Kingdom
- We performed an analysis of the data from patients undergoing mitral valve surgery enrolled in the Registry of Atrial Fibrillation Surgery. Stable sinus rhythm was associated with better survival and fewer embolic events. Left atrial dimension, biatrial approaches, type of atrial fibrillation, and concomitant revascularization are independent predictors of stable sinus rhythm.
- 870 Isolating the entire posterior left atrium improves surgical outcomes after the Cox maze procedure**
Rochus K. Voeller, MD, Marci S. Bailey, RN, Andreas Zierer, MD, Shelly C. Lall, MD, Shun-ichiro Sakamoto, MD, Kristen Aubuchon, Jennifer S. Lawton, MD, Nader Moazami, MD, Charles B. Huddleston, MD, Nabil A. Munfakh, MD, Marc R. Moon, MD, Richard B. Schuessler, PhD, and Ralph J. Damiano, Jr, MD, Saint Louis, Mo
- Isolating the entire posterior left atrium by placing 2 connecting lesions between the pulmonary veins during the Cox maze procedure resulted in a significantly improved freedom from atrial fibrillation recurrence at 1 and 3 months when compared with that after only a single connecting lesion.
- 878 Aortic valve replacement in patients aged 50 to 70 years: Improved outcome with mechanical versus biologic prostheses**
Morgan L. Brown, MD, Hartzell V. Schaff, MD, Brian D. Lahr, MS, Charles J. Mullany, MD, Thoralf M. Sundt, MD, Joseph A. Dearani, MD, Christopher G. McGregor, MD, and Thomas A. Orszulak, MD, Rochester, Minn
- We compared late results of contemporary bioprostheses and bileaflet mechanical prostheses for patients aged 50 to 70 years who underwent aortic valve replacement. Patients with mechanical valves had a survival advantage relative to matched patients with biologic valves, questioning recommendations of bioprosthetic valves for younger patients.
- 885 Valve repair versus valve replacement for degenerative mitral valve disease** 
 *A. Marc Gillinov, MD, Eugene H. Blackstone, MD, Edward R. Nowicki, MD, Worawong Slisatkorn, MD, Ghannam Al-Dossari, MD, Douglas R. Johnston, MD, Kristopher M. George, MD, Penny L. Houghtaling, MS, Brian Griffin, MD, Joseph F. Sabik, III, MD, and Lars G. Svensson, MD, PhD, Cleveland, Ohio*
- It is reasonable to perform valve repair in elderly patients with complex degenerative mitral valve pathology because it can eliminate the need for anticoagulation and risk of prosthesis-related complications. However, when valve pathology is so complex that repair is infeasible, this study demonstrates that valve replacement does not diminish long-term survival.

(continued on page 22A)

894 Pulmonary vein isolation and the Cox maze procedure only partially denervate the atrium

Shelly C. Lall, MD, Kelley V. Foyil, MS, Shun-Ichiro Sakamoto, MD, Rochus K. Voeller, MD, John P. Boineau, MD, Ralph J. Damiano, Jr, MD, and Richard B. Schuessler, PhD, Saint Louis, Mo

Surgical radiofrequency ablation procedures disrupted sympathetic and parasympathetic innervation, affecting heart rate but not atrioventricular interval. Autonomic innervation affecting the atria was changed by means of pulmonary vein isolation and additionally by using the biatrial Cox maze procedure. However, residual effects throughout the atria and on heart rate were seen after the Cox maze lesion set.

901 The aortopathy of bicuspid aortic valve disease has distinctive patterns and usually involves the transverse aortic arch

Shafie S. Fazel, MD, PhD, Hari R. Mallidi, MD, Richard S. Lee, MD, Michael P. Sheehan, MSN, RN, FNP, David Liang, MD, PhD, Dominik Fleischman, MD, Robert Herfkens, MD, R. Scott Mitchell, MD, and D. Craig Miller, MD, Stanford, Calif

Four patterns of thoracic aortic dilatation were identified in patients with bicuspid aortic valves. Cluster I patients should undergo aortic root replacement, whereas in cluster II patients a supracommissural graft is adequate. Patients in clusters III and IV should have arch replacement (plus concomitant root replacement in cluster IV).

908 Hypothermic circulatory arrest with selective antegrade cerebral perfusion in ascending aortic and aortic arch surgery: A risk factor analysis for adverse outcome in 501 patients

Nawid Khaladj, MD, Malakh Shrestha, MD, Sara Meck, MD, Sven Peterss, MD, Hiroyuki Kamiya, MD, PhD, Klaus Kallenbach, MD, Michael Winterhalter, MD, Ludwig Hoy, PhD, Axel Haverich, MD, and Christian Hagl, MD, Hannover, Germany

Hypothermic circulatory arrest with cold selective antegrade cerebral perfusion has become a standard brain protection technique during aortic surgery. This study was performed to identify risk factors for adverse outcome (mortality, permanent and temporary neurologic dysfunction) in a large patient cohort as a single-center experience.

915 Early and late outcome of cardiac surgery in dialysis-dependent patients: Single-center experience with 245 consecutive patients

Parwis B. Rahmanian, MD, David H. Adams, MD, Javier G. Castillo, MD, Joseph Vassalotti, MD, and Farzan Filsoufi, MD, New York, NY

Prospectively collected data of 245 patients with end-stage renal failure who underwent cardiac surgery were retrospectively analyzed by using multivariate regression models. Patients with end-stage renal failure had a significantly increased rate of hospital mortality, postoperative sepsis, and respiratory failure. Long-term survival was particularly reduced in the presence of advanced atherosclerotic disease.

923 Volume–outcome relationships in coronary artery bypass graft surgery patients: 5-year major cardiovascular event outcomes

Herng-Ching Lin, PhD, Sudha Xirasagar, PhD, MBBS, Nai-Wen Tsao, MD, Yi-Ting Hwang, PhD, Nai-Wen Kuo, PhD, and Hsin-Chien Lee, MD, MPH, Columbia, SC, and Taipei, Taiwan

This study examined the association between hospitals' CABG surgery volume and 5-year major adverse cardiovascular events by using a nationwide population-based data. The findings suggest that high-volume hospitals have some processes and/or infrastructure/personnel factors that seem to produce not only better short-term outcomes, but also better long-term outcomes.

(continued on page 24A)

Table of Contents (continued)

Cardiothoracic Transplantation (TX)

- 931 Native lung volume reduction surgery relieves functional graft compression after single-lung transplantation for chronic obstructive pulmonary disease**
T. Brett Reece, MD, John D. Mitchell, MD, Martin R. Zamora, MD, David A. Fullerton, MD, Joseph C. Cleveland, MD, Marvin Pomerantz, MD, Dennis M. Lyu, MD, Frederick L. Grover, MD, and Michael J. Weyant, MD, Denver, Colo

Single-lung transplantation for chronic obstructive pulmonary disease is the most common lung transplantation performed, but a small number of patients will experience native lung hyperinflation that compresses the transplanted lung sufficiently to impair pulmonary function. Native lung volume reduction surgery might help relieve this compression and improve function.

- 938 Dual immunosuppression enhances vasomotor injury: Interactive effect between endothelin-1 and nitric oxide bioavailability**
Danny Ramzy, MD, Laura C. Tumati, BSc, Elissa Tepperman, BSc, Rohit Sheshgiri, BSc, Jessica Jackman, BSc, Mitesh Badiwala, MD, and Vivek Rao, MD, PhD, Toronto, Ontario, Canada

The present study demonstrates a potential mechanism behind corticosteroid and cyclosporine-induced vasomotor injury and suggests possible therapeutic strategies to prevent vasomotor dysfunction. Our findings suggest that the vasomotor impairment is due to alterations in both nitric oxide and ET-1 regulation.

Brief Communications

- 945 Video-assisted thoracoscopic completion pneumonectomy for a second primary cancer: A case report**
Ryoichi Nakanishi, MD, PhD, Ayako Hirai, MD, Toshihiro Yamashita, MD, and Soichi Oka, MD, Kitakyushu, Japan
- 947 Detection and duration of aspirin resistance after coronary artery bypass grafting**
Norbert Zimmermann, MD, Muhammed Kurt, MD, Joachim Winter, MD, Emmeran Gams, MD, Folker Wenzel, MD, and Thomas Hohlfeld, MD, Bonn and Düsseldorf, Germany
- 949 Primary intimal pulmonary artery sarcoma: A diagnostic challenge**
Hans Scheffel, MD, Paul Stolzmann, MD, André Plass, MD, Achim Weber, MD, René Prêtre, MD, Borut Marincek, MD, and Hatem Alkadhi, MD, Zurich, Switzerland
- 951 Left ventricular assist device as a bridge to surgery in postinfarction ventricular septal defect**
Antonios A. Pitsis, MD, FETCS, FESC, Timotheos G. Kelpis, MD, Aikaterini N. Visouli, MD, Georgios Bobotis, MD, Gerasimos S. Filippatos, MD, FCCP, FESC, and Dimitrios T. Kremastinos, MD, FESC, FACC, Thessaloniki and Athens, Greece
- 953 Right-sided heart reperfusion in pediatric patients with left ventricular assist device**
Daniel Schmauss, Christoph Schmitz, MD, Edward Malec, MD, Markus A. Deutsch, MD, Ingo Kaczmarek, MD, Andre Beiras-Fernandez, MD, Matthias Loebe, PhD, Bruno Reichart, MD, and Ralf Sodian, MD, Munich, Germany, and Houston, Texas
- 954 Hemoptysis caused by an endobronchial lipoma**
Pier Luigi Filosso, MD, Roberto Giobbe, MD, Claudio Mossetti, MD, Enrico Ruffini, MD, and Alberto Oliaro, MD, Torino, Italy
- 955 A new type of diaphragmatic hernia: Anterolateral hernia**
Jérôme Mouroux, MD, PhD, Daniel Pop, MD, Patrice Guiraudet, MD, Ricardo Giovanetti, MD, Jérôme Lauron, MD, and Nicolas Venissac, MD, Nice, France

(continued on page 26A)

Table of Contents (continued)

957 Primary esophageal large T-cell lymphoma mimicking esophageal carcinoma: A case report and literature review

Patrick L. Wagner, MD, Wayne Tam, MD, PhD, Pauline Y. Lau, MD, Jeffrey L. Port, MD, Subroto Paul, MD, Nasser K. Altorki, MD, and Paul C. Lee, MD, New York, NY

Events of Interest

959 Events

Announcements

The American Association for Thoracic Surgery

961 *Announcement of 2008 Annual Meeting*

961 *Applications for Membership*

961 *Evarts A. Graham Memorial Traveling Fellowship, 2009-2010*

961 *Resident Traveling Fellowship, 2008-2009*

962 *Third Edward D. Churchill Research Scholarship 2009-2011*

The Western Thoracic Surgical Association

962 *Announcement of 2008 Annual Meeting*

962 *Applications for Membership*

The American Board of Thoracic Surgery

963 *Notices*

963 *Requirements for Maintenance of Certification*

Notices of Correction

770 *Correction of article by Markus Kondruweit, Michael Weyand, Faide Omar Mahmoud, Walter Geißdörfer, Christoph Schoerner, Dieter Ropers, Stephan Achenbach, and Thomas Strecker, entitled "Fulminant endocarditis caused by Streptobacillus moniliformis in a young man" (2007;134:1579-80).*

856 *Correction of article by Patrick S. Wolf, Heather E. Merry, Alexander S. Farivar, Anton S. McCourtie, and Michael S. Mulligan, entitled "Stress-activated protein kinase inhibition to ameliorate lung ischemia reperfusion injury" (2008;135:656-65).*

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